Annex P

Preliminary 1997 Estimates of U.S. Greenhouse Gas Emissions and Sinks

This annex provides preliminary 1997 estimates of greenhouse gas emissions and sinks. Although these calculations are not final, large changes are not expected, and therefore, this annex allows the reader to evaluate the trend in U.S. emissions.

The following trends are evident based on a comparison of these preliminary 1997 estimates and 1990 through 1996 estimates found in the body of this report. In 1997, total U.S. emissions appear to have grown by 180 MMTCE (11.0 percent) since 1990. From 1996 to 1997, emissions rose by 1.4 percent, or 25 MMTCE. Table P-1 below shows preliminary estimates in teragrams (Tg) of gas and MMTCE.

Specifically, emissions of CO_2 increased by 10.6 percent over the 8 year period, and by 1.4 percent in the last year. Increases in emissions from coal and natural gas combustion by utilities and petroleum consumption by industry were responsible for the majority of this increase in emissions.

Methane emissions grew by 5.5 percent over the 1990 to 1997 period, and by 0.4 percent in the last year. From 1996 to 1997, most CH_4 sources experienced small increases or decreases. Emissions from rice cultivation grew the most in terms of percentage (10.1 percent), while landfill emissions grew the most absolutely (1.6 MMTCE).

Nitrous oxide emissions rose 13.8 percent over the 1990 to 1997 period. However, from 1996 to 1997, N_2O emissions increased by only 1.2 percent or 1.3 MMTCE. In the last year, emissions from adipic acid production dropped by 37 percent due to improved industrial controls. As a percentage increase, emissions from manure management rose the most (25.7 percent). The source contributing the most to the total N_2O increase was agricultural soil management (1.6 MMTCE).

Emissions of HFCs, PFCs, and SF_6 showed a 6.4 percent increase from 1996 to 1997. Over the 1990 to 1997 period, emissions from this sector increased by 66.4 percent or 14.7 MMTCE. In the last year, emissions from HCFC-22 production and semiconductor manufacture showed a slight decrease. However, increased emissions of 2.6 MMTCE from the substitution of ozone depleting substances offset this trend.

Table P-1: Preliminary 1997 Estimates of U.S. Greenhouse Gas Emissions and Sinks

Gas/Source	Tg	MMTCE
CO_2	**5,469.3**	**1,491.6**
Fossil Fuel Combustion	5,391.4	1,470.4
Natural Gas Flaring	12.4	3.4
Cement Manufacture	38.8	10.6
Lime Manufacture	14.2	3.9
Limestone and Dolomite Use	7.0	1.9
Soda Ash Manufacture and Consumption	4.4	1.2
Carbon Dioxide Manufacture	1.1	0.3
Land-Use Change and Forestry (Sink)[a]	(764.7)	(208.6)
CH_4	**31.3**	**179.3**
Stationary Sources	0.39	2.24
Mobile Sources	0.2	1.2
Coal Mining	3.3	18.7
Natural Gas Systems	5.9	33.5
Petroleum Systems	0.3	1.6
Petrochemical Production	0.1	0.4
Silicon Carbide Production	+	+
Enteric Fermentation	6.0	34.2
Manure Management	3.0	17.0
Rice Cultivation	0.5	2.7
Agricultural Residue Burning	+	0.2
Landfills	11.7	66.7
Wastewater Treatment	0.2	0.9
N_2O	**876.7**	**105.0**
Stationary Sources	+	4.13
Mobile Sources	0.2	16.9
Adipic Acid	+	3.4
Nitric Acid	0.1	4.2
Manure Management	43.9	3.7
Agricultural Soil Management	830.8	70.2
Agricultural Residue Burning	1.6	0.1
Human Sewage	+	2.3
Waste Combustion	+	0.1
HFCs, PFCs, and SF_6	**M**	**36.9**
Substitution of Ozone Depleting Substances	M	14.5
Aluminum Production	M	2.9
HCFC-22 Production[b]	+	8.2
Semiconductor Manufacture	M	1.3
Electrical Transmission and Distribution[c]	+	7.0
Magnesium Production and Processing[c]	+	3.0
Total Emissions	**NA**	**1812.9**
Net Emissions	**NA**	**1604.4**

Note: Totals may not sum due to independent rounding.
+ Does not exceed 0.05 Tg or 0.05 MMTCE
M (Mixture of multiple gases)
NA (Not Applicable)
[a] Sinks are not included in CO_2 emissions total.
[b] HFC-23 emitted
[c] SF_6 emitted